NASA	1

## **Laser Safety Permit**

PERMIT NUMBER:	ISSUE DATE: EXPIRAT		ION DATE:		
10-003		1/22/2010		12/31/2010	
LOCATION (BUILDING, ROOM, AIRCRAFT NO.,	ETC.)	DRAWING AND PI	ROCEDURE NUMBE	RS:	CLASS OF LASER:
NASA 872, Hangar 4801					3B
					LASER TYPE:
					Tunable Diode
ACTIVITIES REQUIRING APPROVALS (i.e., Fac	ilities, Equ	pment, etc.):			LASER MANUFACTURER:
These tunable diode laser is part of the UAS Laser Hygrometer (ULH) experiment being flown as part of an experimental suite during the GloPac mission on NASA 872. The diode laser is contained in an optical cell located external to Zone 13 and is used to measure water concentration and relative humidity. Activities are to include both air and ground operation of the laser.					NEL
					MODEL NUMBER:
					N/A
					SERIAL NUMBER:
					N/A
					ВЕАМ ТҮРЕ:
					CW
ACTIVITY APPROVED SUBJECT TO THE FOLL	OWING C	ONDITIONS:			POWER:
The beam path will remain enclosed within an in					5 mW
the beam energy to eye-safe levels at distances ov ground operations, the ground crew will be advis				For	BEAM WAVELENGTH:
ground operations, the ground crew will be advis	ed before	urning on the laser	•		1370 nm
					BEAM DIAMETER:
				:	3 mm
					BEAM DIVERGENCE:
					3 mrad
					PULSE FREQUENCY:
					N/A
					PULSE DURATION:
				2, 31, 30, 41, 41, 42, 42, 44, 44, 44	N/A
	HORIZED	TO OPERATE LAS	ER SYSTEM UNDE		ERMIT:
1. Robert L. Herman (JPL)		5.	Jose J. Landeros (	JPL)	-
2. Robert F. Troy (JPL)		6.			
3. Anthony J. Scodary (JPL)		7.			
4. Gregory J. Flesch (JPL)		8.			
REVIEW AUTHORITY ACTION					
ACTIVIT	Y COMPL	ETED (Complication	ans / Incidents / Co	mments)	
APPROVAL TO OPERATE L	<del>1010101101010101010101</del>			<u> </u>	N IS COMPLETE
LASER SAFETY OFFICER:	DAT	E: LAS	SER SAFETY OFFIC	ER:	DATE:
John in Putt	1/	22/2010			·
Instructions:	,	vious plane et the	location describe	d mela4-	lacon operations
<ol> <li>A copy of this permit must be posted in</li> <li>Submit a request for a new permit at learning</li> </ol>				u prior to	iaser operations.

- - The activity will not be completed by the expiration date.
  - b. Any changes are made in the conditions as described in the permit.
- When the activity is completed, remove this permit, indicate the completion date and return permit to the Laser Safety Officer, Mail Stop 4850.
- For questions concerning this permit or laser operations contact the Laser Safety Office at X2307.

NASA	

## **Laser Safety Permit**

PERMIT NUMBER:	ISSUE DATE: EXPIR.		EXPIRAT	RATION DATE:	
10-002	1/22/2010		12/31/2010		
LOCATION (BUILDING, ROOM, AIRCRAFT NO.,	ETC.)	DRAWING AND PROCEDURE NUMB	ERS:	CLASS OF LASER:	
NASA 872, Hangar 4801				3B	
				LASER TYPE:	
				Diodes (5)	
ACTIVITIES REQUIRING APPROVALS (i.e., Faci	lities, Equ	uipment, etc.):		LASER MANUFACTURER:	
These diode lasers are part of the Nuclei-Mode Aerosol-Size Spectrometer (NMASS) experiment being				Sony Semiconductor	
flown as part of an experimental suite during the GloPac mission on NASA 872. The diode lasers are fully				MODEL NUMBER:	
contained in the experiment and is used in measuring the diameter and concentration of particles between 4 to 100 nm diameter. Activities are to include both air and ground operation of the laser.			SLD201V-3		
to 100 nm diameter. Activities are to include both air and ground operation of the laser.				SERIAL NUMBER:	
				N/A	
				BEAM TYPE:	
				CW	
ACTIVITY APPROVED SUBJECT TO THE FOLL	OWING C	CONDITIONS:		POWER:	
Do not operate laser with experimental enclosure	opened.			40 mW each (200mW Total)	
				BEAM WAVELENGTH:	
				780 nm	
				BEAM DIAMETER:	
				3 mm	
				BEAM DIVERGENCE:	
				25 mrad	
				PULSE FREQUENCY:	
				N/A	
				PULSE DURATION:	
				N/A	
PERSONS AUT	HORIZED	) TO OPERATE LASER SYSTEM UNDI	R THIS P	ERMIT:	
1. James C. Wilson (Denver University)		5.			
2. John M. Reeves (Denver University)		6.			
3.	***	7.	-		
4.		8.			
REVIEW AUTHORITY ACTION					
ACTIVITY COMPLETED (Complications / Incidents / Comments)					
APPROVAL TO OPERATE LA	ASER		OPERATIO	IN IS COMPLETE	
LASER SAFETY OFFICER:	DAT	TE: LASER SAFETY OFFI	CER:	DATE:	
John a. Pust	11	122/2010			
Instructions:	· · · · · · · · · · · · · · · · · · ·				
A copy of this permit must be posted in a conspicuous place at the location described prior to laser operations.     Submit a request for a new permit at least 30 days prior to the expiration date if:					

- - The activity will not be completed by the expiration date.
  - b. Any changes are made in the conditions as described in the permit.
- When the activity is completed, remove this permit, indicate the completion date and return permit to the Laser Safety Officer, Mail Stop 4850.
- For questions concerning this permit or laser operations contact the Laser Safety Office at X2307.



## **Laser Safety Permit**

PERMIT NUMBER:	ISSUE DATE: EXPIRAT		TON DATE:	
10-001	1/22/2010		12/31/2010	
LOCATION (BUILDING, ROOM, AIRCRAFT NO.,	ETC.)	DRAWING AND PROCEDURE NUMBER	BERS:	CLASS OF LASER:
NASA 872, Hangar 4801				3B
				LASER TYPE:
				HeNe
ACTIVITIES REQUIRING APPROVALS (i.e., Faci	lities, Equi	ipment, etc.):		LASER MANUFACTURER:
This laser is part of the Focused Cavity Aerosol S				Research Electro-Optics, Inc
experimental suite during the GloPac mission on NASA 872. The laser is fully contained in the experiment and is used in measuring the diameter and concentration of particles between 100 to 2000 nm diameter. Activities are to include both air and ground operation of the laser.				MODEL NUMBER:
				LTRR-1200M-NS
				SERIAL NUMBER:
				Installed-N/A; Spare - 5088-1896-02
				BEAM TYPE:
·				CW
ACTIVITY APPROVED SUBJECT TO THE FOLLO	OWING CO	ONDITIONS:		POWER:
Do not operate laser with experimental enclosure	opened.			15 mW
				BEAM WAVELENGTH:
				632.8 nm
				BEAM DIAMETER:
				100 microns
				BEAM DIVERGENCE:
				20 mrad
				PULSE FREQUENCY:
				N/A
				PULSE DURATION:
				N/A
PERSONS AUTI	HORIZED	TO OPERATE LASER SYSTEM UND	ER THIS PI	ERMIT:
1. James C. Wilson (Denver University)		5.		
2. John M. Reeves (Denver University)		6.		
3.		7.		
4.		8.		
	F	REVIEW AUTHORITY ACTION		
National distribution of the desire of the d	<del>oe ne ar so so so so so de so so</del>		1. 30 30 30 30 40 40 30 30 30 30 30	
ACTIVIT	Y COMPL	ETED (Complications / Incidents / C	omments)	
APPROVAL TO OPERATE LA	4SER		OPERATIO	N IS COMPLETE
LASER SAFETY OFFICER:	DAT		CER:	DATE:
John U. Statt	1	122/2610		3
Instructions:				
Acopy of this permit must be posted in     Submit a request for a new permit at lea			ed prior to	laser operations.

- - a. The activity will not be completed by the expiration date.
  - b. Any changes are made in the conditions as described in the permit.
- When the activity is completed, remove this permit, indicate the completion date and return permit to the Laser Safety Officer, Mail Stop 4850.
- For questions concerning this permit or laser operations contact the Laser Safety Office at X2307.